

Neural Interfaces Workshop

September 7-9, 2005

Hyatt Regency Bethesda Hotel
Bethesda, Maryland

Agenda

Wednesday, September 7, 2005

- 7:30 - 8:00 a.m. **Registration/Continental Breakfast**
Poster/Display area open
- 8:00 - 8:05 a.m. **Introduction and Goals**
Dr. Joseph Pancrazio,
National Institute of Neurological Disorders and Stroke (NINDS)
- 8:05 - 8:10 a.m. **Welcome**
Dr. Story Landis, Director, NINDS
- 8:10 - 8:20 a.m. **The Importance of Deep Brain Stimulation to the Parkinson's Community**
Mr. Jeffrey C. Martin
- 8:20 - 10:05 a.m. **Plenary Session 1: Progress in Deep Brain Stimulation**
8:20 - 8:25 a.m. *Facilitator: Dr. Eugene Oliver, NINDS*
- 8:25 - 8:50 a.m. **DBS for Movement Disorders -
Current Clinical Challenges and Future Opportunities**
Dr. Jerrold Vitek, The Cleveland Clinic
- 8:50 - 9:15 a.m. **Effects of STN Stimulation on Tremor, Rigidity, and Bradykinesia**
Dr. Daniel Corcos, University of Illinois at Chicago
- 9:15 - 9:40 a.m. **Impact of Deep Brain Stimulation of the STN on Cognition and Mood**
Dr. Marjan Jahanshahi, University of London
- 9:40 - 10:05 a.m. **Rodent Model of Brain Stimulation, Behavioral and Electrophysiological
Approaches to Parkinson's Disease Research**
Dr. Jing-Yu Chang, Wake Forest University
- 10:05 - 10:15 a.m. **Discussion**
- 10:15 - 10:30 a.m. **Break**



Agenda

Wednesday, September 7, 2005, continued

- 10:30 - 10:55 a.m. **Effects of Pallidal and DBS on Single Neuron Activity in the Primate Globus Pallidus and Motor Cortex**
Dr. Robert Turner, University of California, San Francisco
- 10:55 - 11:20 a.m. **Cortical Effects of STN Stimulation: An Intracellular Study in Anesthetized Rats**
Dr. Dieter Jaeger, Emory University
- 11:20 - 11:45 a.m. **Cortical and Putaminal Mechanisms for Self-Timed Movements**
Dr. John Assad, Harvard Medical School
- 11:45 - 11:55 a.m. **Discussion**
- 11:55 a.m. - 12:30 p.m. **Platform Presentations**
Facilitator: Dr. Joseph Pancrazio, NINDS
Platform Presentation Presenters:
- *Alan Dorval, Duke University*
 - *Christopher Butson, Cleveland Clinic Foundation*
 - *Jeffrey Wertheimer, Wayne State University School of Medicine*
 - *Sarah Richardson-Burns, University of Michigan*
 - *Dorothy Vawter, Minnesota Center for Health Care Ethics*
 - *Cha-Min Tang, University of Maryland*
- 12:30 - 1:30 p.m. *Lunch (on your own)*
- 1:30 - 2:30 p.m. **Poster Session**
- 2:30 - 3:50 p.m. **Plenary Session 2: Novel Interface Technologies for Stimulation and Control**
Facilitator: Dr. Joseph Pancrazio, NINDS
- 2:35 - 3:00 p.m. **Deep Brain Stimulation Using Microactuated Microprobes**
Dr. Jitendran Muthuswamy, Arizona State University
- 3:00 - 3:25 p.m. **Polymer-Based Microelectrode Arrays for Stimulation**
Dr. Scott Corbett, Advanced Cochlear Systems
- 3:25 - 3:50 p.m. **Nanoelectrode Array for Neural Electrophysiology Using Carbon Nanofibers**
Dr. Jun Li, NASA Ames Research Center
- 3:50 - 4:00 p.m. *Break*
- 4:00 - 5:00 p.m. **Future Directions for Deep Brain Stimulation**
- *Dr. Warren Grill, Duke University*
 - *Dr. Steven Shapiro, Virginia Commonwealth University*
 - *Dr. Jerrold Vitek, The Cleveland Clinic*
- 5:00 - 6:00 p.m. **Poster Session**

Agenda

Thursday, September 8, 2005

- 7:30 - 8:00 a.m. **Registration/Continental Breakfast**
Poster/Display area open
- 8:00 - 8:10 a.m. **Introduction and Goals**
Dr. Joseph Pancrazio, NINDS
- 8:10 - 8:25 a.m. **Key Note Address: Impact of Neural Prosthesis on Quality of Life**
Mr. Laszlo Nagy
- 8:25 - 9:35 a.m. **Plenary Session 3: Surgical Considerations for Neural Interfaces**
8:25 - 8:30 a.m. *Facilitator: Dr. Michael Weinrich,*
National Institute of Child Health and Human Development (NICHD)
- 8:30 - 8:50 a.m. **Functional Neuromuscular Stimulation**
Dr. Michael Keith, Case Western Reserve University
- 8:50 - 9:15 a.m. **Brain-Machine Interfaces**
Dr. Gerhard Friehs, Brown University
- 9:15 - 9:35 a.m. **Discussion**
- 9:35 - 9:50 a.m. *Break*
- 9:50 - 10:45 a.m. **Plenary Session 4: Chronic Recording Microelectrodes**
9:50 - 9:55 a.m. *Facilitator: Dr. Daofen Chen, NINDS*
- 9:55 - 10:20 a.m. **Chronic Recording Microelectrode Array**
Dr. Kensall Wise, University of Michigan
- 10:20 - 10:45 a.m. **Chronic Recording Microelectrode Array**
Dr. Florian Solzbacher, University of Utah
- 10:45 - 10:55 a.m. **Discussion**
- 10:55 - 11:10 a.m. **Student Fellowship Awardees**
 - *Dr. Meredith Temple-O'Connor,*
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
 - *Ms. Stephanie Fertig, NINDS*
- 11:10 a.m. - 12:00 p.m. **Platform Presentations**
Facilitator: Dr. Joseph Pancrazio, NINDS
Platform Presentation Presenters:
 - *Yoon-Kyu Song, Brown University*
 - *Philip Kennedy, Neural Signals Inc.*
 - *Philip Troyk, Illinois Institute of Technology*
 - *Douglas Weber, University of Pittsburgh*
 - *Jane Burridge, University of Southampton*
 - *Hubert Lim, University of Michigan*
 - *Neville Mehenti, Stanford University*
 - *Calvin Yang, University of California*
 - *Victor Pikov, HMRI*
- 12:00 - 1:00 p.m. *Lunch (on your own)*

Agenda

Thursday, September 8, 2005, continued

1:00 - 2:00 p.m.	Poster Session
2:00 - 3:30 p.m.	Plenary Session 5: Neural Interfaces for Sensory Information
2:00 - 2:05 p.m.	<i>Facilitator: Dr. Roger Miller, National Institute on Deafness and Other Communication Disorders (NIDCD)</i>
2:05 - 2:30 p.m.	Insights on Auditory Prosthesis Design From Animal Models <i>Dr. Patricia Leake, University of California, San Francisco</i>
2:30 - 2:55 p.m.	Intraocular Retinal Prosthesis <i>Dr. Mark Humayan, University of Southern California</i>
2:55 - 3:20 p.m.	Vestibular Prosthesis Encoding 3D Head Movement <i>Dr. Charles Della Santina, Johns Hopkins University</i>
3:20 - 3:30 p.m.	Discussion
3:30 - 3:45 p.m.	<i>Break</i>
3:45 - 4:45 p.m.	Plenary Session 6: Spinal Cord Interfaces
3:45 - 3:50 p.m.	<i>Facilitator: Dr. Naomi Kleitman, NINDS</i>
3:50 - 4:10 p.m.	Intraspinal Microstimulation for Restoring Limb Movements After Spinal Cord Injury <i>Dr. Vivian Mushahwar, University of Alberta</i>
4:10 - 4:35 p.m.	Floating Light-Activated Micro-Stimulators for Neural Prosthetics <i>Dr. Mesut Sahin, Louisiana Tech University</i>
4:35 - 4:45 p.m.	Discussion
5:30 - 6:00 p.m.	Breakout Session I Support Opportunities for Graduate Students and Post-Docs <i>Dr. Meredith Temple O'Connor, NIBIB</i>
	Breakout Session II Speaking to the Press About Neural Interfaces <i>Ms. Marian Emr, NINDS</i>
6:00 - 7:00 p.m.	Poster Session

Agenda

Friday, September 9, 2005

8:00 - 9:45 a.m.	Plenary Session 7: Future Efforts in Neural Interfaces
8:00 - 8:05 a.m.	<i>Facilitator: Dr. Grace Peng, NIBIB</i>
8:05 - 8:20 a.m.	Human Assistive Neural Devices Program
	<i>Dr. Geoffrey Ling, Defense Advanced Research Projects Agency (DARPA)</i>
8:20 - 8:40 a.m.	Nanofiber Material and Microscale Braiding Technologies for Multifunctional Neural Prosthetics
	<i>Dr. Simon Giszter, Drexel University</i>
8:40 - 9:05 a.m.	Novel Paradigms for Neural Interfaces
	<i>Dr. Miguel Nicolelis, Duke University</i>
9:05 - 9:30 a.m.	Optical Stimulation of Neural Tissue
	<i>Dr. E. Duco Jansen, Vanderbilt University</i>
9:30 - 9:45 a.m.	<i>Break</i>
9:45 - 10:10 a.m.	Neurotransmitter-Based Neural Interfaces
	<i>Dr. David Pepperberg, University of Illinois at Chicago</i>
10:10 - 10:35 a.m.	Implantable Biometric Electronics as Neural Prosthesis for Lost Cognitive Function
	<i>Dr. Theodore Berger, University of Southern California</i>
10:35 - 11:00 a.m.	Advances in Neural Interfaces From <i>In Vitro</i> Models
	<i>Dr. Bruce Wheeler, University of Illinois</i>
11:00 a.m. - 12:00 p.m.	Future Directions for Neural Prosthetics
	<ul style="list-style-type: none">• <i>Dr. Theodore Berger, University of Southern California</i>• <i>Dr. Charles Della Santina, Johns Hopkins University</i>• <i>Dr. Warren Grill, Duke University</i>• <i>Mr. Geoffrey Thrope, NDI Medical, LLC</i>
12:00 p.m.	<i>Meeting Adjourns and Poster Removal</i>